

shore of Wolf Lake, Sept. 18, 1961. LAKE COUNTY: *Sherff XY6011*, sandy east shore of Wolf Lake, ± 7 miles north of Baldwin, Sept. 6, 1961.

Throughout my examinations of var. *gracilipes* in the field at the above-mentioned Michigan habitats, attention was paid to the foliar variations in the direction of var. *pinnata*. Such variations were found to be rare. In the suite numbered *XY6016*, composed of some twenty or more small, depauperate plants, two were found to have several leaves each with two pairs of slenderly lanceolate lateral leaflets or pinnae, instead of a single pair of broader ones. Apparently this was the maximum extent to which var. *gracilipes* approached var. *pinnata*. To summarize, then, while the var. *pinnata*, as stated earlier, was not found to intergrade into var. *gracilipes*, the latter variety was found, though very rarely, to offer a slight approach in leaf-form to var. *pinnata*. There was no indication, however, that the two varieties were not distinct or worthy of being accorded separate status. — CHICAGO NATURAL HISTORY MUSEUM.

THE ANNUAL SPECIES OF HOUSTONIA IN ILLINOIS

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The genus *Houstonia* in northeastern North America is represented by two well-defined groups. One group contains delicate, vernal-flowering annuals with single-flowered peduncles, salverform corollas, and globular seeds. The other contains coarser, summer-flowering perennials with a compound inflorescence, funnelform corollas, and rather flattened seeds.

This paper is concerned with the annual vernal species in Illinois. A subsequent paper will be devoted to the perennial species.

Four or five species of the annual bluets occur in northeastern North America. (The discrepancy arises from the status of *H. faxonorum* Fern. or *H. caerulea* var. *faxonorum* Pease and Moore). Three of these are attributed to Illinois in varying degrees of abundance by different workers.

Houstonia serpyllifolia Michx., from the mountains of Pennsylvania south to Georgia, does not occur in Illinois.

A check of any manual concerning the Illinois flora would lead one to believe that *H. caerulea*, *H. pusilla*, and *H. minima* are more common than is actually the case.

The latest treatment on distribution of Illinois vascular plants is that by Winterringer and Evers¹. These workers list *H. caerulea* from ten Illinois counties along the eastern border and the southern fourth of the state. The present study reveals that five of the six reports from southern Illinois are based on misidentifications. The sixth report from St. Clair County late last century is likely a case of mixed labels since the collector often was guilty of this.

Winterringer and Evers attribute *H. minima* to 17 Illinois counties, including 3 in the southern tip of the state. Our study shows *H. minima* to occur in 17 counties, but to be absent in the extreme southern counties of Jackson and Saline. Records from these counties are based on misidentifications for *H. pusilla*.

Houstonia pusilla is limited in Illinois to the southern one-third of the state. The present study has enabled us to fill in most of the gaps in its distribution in southern Illinois.

Since all three species are reported to occur in southern Illinois with seeming regularity, the senior author thought it strange that on his many field trips and those of his colleagues and students, no authentic material of two of these — *H. caerulea* and *H. minima* — showed up in the collections.

During the spring of 1961, the junior author made vast collections of annual bluets throughout southern Illinois. These were studied intensively before being pressed for the herbarium. In the entire collection of several hundred specimens, there appeared no *H. caerulea* and no *H. minima*. All specimens were unquestionably *H. pusilla*.

Why, then, are there so many apparently erroneous reports of *H. caerulea* and *H. minima*? There is general agreement among field botanists that each species has a distinctive

¹Winterringer, G. S. and R. A. Evers. 1960. New Records for Illinois Vascular Plants. Illinois State Museum, 135 pp.

field recognition character. *Houstonia caerulea* is distinguished by the yellow eye or center in each flower, while the other species basically have a dark, usually reddish eye. A hurried glance at the flower either of *H. pusilla* or *H. minima* might reveal a yellow center, due to the presence of pollen on the mature anther, and thus this may account for the erroneous reports of *H. caerulea* in southern Illinois. Anyone familiar with the larger, pale-flowered *H. caerulea*, with its conspicuous yellow center, could never confuse this species with any other.

Houstonia minima sometimes is recognized in the field by its tiny stature. In our study, we have found *H. pusilla* as dwarfed as 1 cm. tall, during anthesis. Local naturalists, on being shown this specimen, immediately respond with *H. minima*. The only valid criterion to distinguish *H. minima* and *H. pusilla* is not stature, but relative length of calyx to corolla. *Houstonia minima* has a calyx equalling the corolla tube in length, while *H. pusilla* has a calyx barely half the length of the corolla tube. Although no specimens of *H. minima* were discovered in the field in southern Illinois during this study, there exists an authentic specimen in the University of Illinois herbarium of this species from Johnson County. Efforts to relocate this population have failed.

Since most modern manuals fail to give complete descriptions of *H. caerulea*, *H. pusilla*, and *H. minima*, it seems desirable to present descriptions in this paper.

KEY TO THE ANNUAL SPECIES OF HOUSTONIA IN ILLINOIS

1. Flowers pale blue or lilac, with a broad, pale yellow center; corolla tube 5-10 mm. long; capsule 3-4 mm. wide 1. *H. caerulea*.
1. Flowers purple, with a small dark, usually red, eye; corolla tube 3-5 mm. long; capsule 2-3 mm. wide.
 2. Calyx lobes 1.2-1.9 mm. long, half as long as corolla tube 2. *H. pusilla*.
 2. Calyx lobes 2.0-3.5 mm. long, equalling the corolla tube 3. *H. minima*.

1. *Houstonia caerulea* L. Sp. Pl. 105. 1753.

Slender, tufted annuals; stems erect, flexuous, rather sparsely branched, to 15 cm. tall (in Illinois), glabrous or rarely puberulent; rosette leaves obovate to elliptic to spatulate, obtuse to subacute at apex, 4-15 mm. long, 2-6 mm. broad, glabrous or short hairy; petiole 1-6 mm. long, glabrous or sparsely puberulent; cauline leaves much

reduced, 2-7 mm. long, 1-3 mm. broad; peduncles filiform, 2-7 cm. long, glabrous or nearly so; bracts resembling the cauline leaves; sepals oblong, acute, 1.0-2.5 mm. long, glabrous; corolla salverform, pale blue to lilac to rarely nearly white, with a large yellow center (eye), the tube 5-10 mm. long, glabrous, the flower 10-15 mm. wide; capsule bilobed, flattened, 3-4 mm. wide, broader than long.

Habitat. — Open woods and fields.

General Range. — Nova Scotia to Wisconsin south to Missouri and Georgia.

Illinois Range. — Four eastern border counties; absent from the extreme south.

Date of Flowering in Illinois. — April 7 to May 17.

2. *Houstonia pusilla* Schoepf, in Reise 2:306. 1788.

Houstonia patens Ell. Bot. S. C. & Ga. 1:191. 1816.

Usually tiny, tufted annuals; stems erect, stiffer than the preceding, 1-12 cm. tall, glabrous; rosette leaves ovate to elliptic, subacute to acute, 5-10 mm. long, 3-7 mm. broad, glabrous and usually scaberulous along the margins; cauline leaves smaller and narrower; petiole 1-3 mm. long, glabrous; peduncles 1-4 cm. long, glabrous or nearly so; bracts resembling the upper cauline leaves; sepals linear to narrowly oblong, acute, 1-2 mm. long, glabrous; corolla salverform, deep purple, usually with a dark reddish center (eye), the tube 3-5 mm. long, about twice the length of the calyx, glabrous, the flower 4-8 mm. wide; capsule bilobed, flattened, 2-3 mm. wide, slightly longer than broad.

Habitat. — Xeric sandstone bluffs, open woods, fields, and pastures.

General Range. — Virginia to Missouri south to Texas and Florida.

Illinois Range. — The southern one-third of the state, north to Montgomery County.

Date of Flowering in Illinois. — March 22 to May 4.

Five-merous flowers sometimes occur.

3. *Houstonia minima* Beck, in Am. Journ. Sci. 10:262. 1826.

Tiny, tufted annuals; stems erect, 1-7 cm. tall, glabrous; rosette leaves ovate to elliptic, subacute to acute, 5-7 mm. long, 2-5 mm. broad, glabrous and usually scaberulous along the margins; cauline leaves smaller and narrower; petiole 1-3 mm. long, glabrous; peduncles 1-4 cm. long, glabrous or nearly so; bracts resembling the upper cauline leaves; sepals lanceolate to ovate-lanceolate, acute, 2-4 mm. long, glabrous or scaberulous; corolla salverform, deep purple, usually with a dark reddish center (eye), the tube 3-5 mm. long, barely longer than the calyx, glabrous, the flower 3-6 mm. wide; capsule bilobed, flattened, 2-3 mm. wide, slightly longer than broad.

Habitat. — Open woods and fields.

General Range. — Illinois to Kansas south to Texas and Arkansas.

Illinois Range. — Essentially the western counties, although one record from Richland County.

Date of Flowering in Illinois. — April 6 to May 19. — SOUTHERN ILLINOIS UNIVERSITY, CARBONDALE.